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An application of an IDEFO model to improve the process of base closure: a case study

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THESIS

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by

Varanda K. Phillips

December , 1993

Thesis Advisor: Kenneth J. Euske

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An Application of an IDEF0 Model to Improve the Process
of Base Closure: A Case Study

by

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Submitted in partial fulfillment
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I. INTRODUCTION

A. GENERAL BACKGROUND

Between 1981 and 1985, American defense spending increased from $199 billion to $264 billion (constant 1986 dollars), a 32 percent growth rate in real terms.(Oye, 1987,p.75) During this same time frame the United States also created record deficits and tripled the national debt. By the end of the decade the national debt exceeded $2.5 trillion. Rising debt forced congress to seek substantial budget reductions. Growth in defense spending was perceived to be a major contributor to the spiraling debt. Defense was targeted by congress as an area where significant cost-cutting measures should be put in effect. Defense budgets were reduced for the out years.(Defense,1988)

In April of 1989 congress announced the closure of 86 military installations. With the government facing large deficits, the pressure to cut defense is likely to continue. Entrance into the new post cold war era has essentially guaranteed that the cuts will continue. The demise of communism and the break up of the Soviet Union into a commonwealth of independent states, has shifted United States security policy from one of containment to one of engagement.(Rothman, 1992, p.2) Inherent to the new policy,

or strategy, is the fact that it will not require the large numbers of personnel, hardware, and facilities that were built up in the eighties. Base closures will remain a viable means of reducing defense budgets.

B. OBJECTIVE

The base closure process is likely to be a complex management problem. The rarity of base closure creates a unique circumstance for the military. The military has had to execute a large scale complex process without the benefit of experienced personnel, repetition, or well-rehearsed plans and procedures. If executed improperly a base closure could become more of a liability than an asset with cost overruns and time delays.

Since additional base closures are imminent, the focus of this thesis is the application of a "process improvement process" model developed by a redesign experts and practices (REAP) team, composed of Naval Postgraduate School Faculty and students. The model is be applied to the process of base closure at Naval Air Station Moffett Field to determine if use of the model has ramifications for redesign or improvement of the process currently used for base closure.

C. RESEARCH QUESTION

The primary research question is: Can use of the REAP model improve the process of base closure? Subsidiary research questions are:

- What is the process for closure currently in place at Moffett Field?
- How effectively has the process been implemented?
- What are the implications for use of the model on future base closings?

D. SCOPE, LIMITATIONS AND ASSUMPTIONS

The main thrust of this study is to examine the process of base closure at Moffett Field and determine if it and future base closure processes can be improved by applying the REAP model. These are the areas of the process that were examined:

- Administrative planning and preparation
- Relocation of personnel
- Transfer/ disposal of equipment and property
- Transfer of facilities and housing
- Civilian work force dispersion
- Environmental cleanup

Although Moffett Field was originally ordered to fully shut down as a government installation, there has been a modification to the order. Instead of a full closure, the process Moffett Field is undergoing has been deemed a

"transfer" since the facilities will be turned over to another government organization, NASA.(Henderson, 1992) Evaluating the process as a closure is still valid because everything that operated at the base in the past will be shut down in the same manner as if it were an ordinary closure. The main difference is that instead of turning the facilities over to the civilian community, as would be done in a normal closure, everything will be turned over to another government agency. The procedures for transfer, and relocation essentially remain the same. If costs are involved, payments must be made within government agencies just as they would be made to civilians.(Nagle,1993)

E. METHODOLOGY

Information was gathered by conducting interviews, and reviewing available literature, military instructions, notices and messages. Interviews were conducted with military personnel involved in executing the base closure orders. Data were obtained from the executive committee for base closure at Moffett Field. Information about the IDEF model came from Redesign Experts and Practices (REAP) team.

F. ORGANIZATION OF THE STUDY

This thesis is divided into four chapters, beginning with this introduction. Chapter II deals with the identification of the process used at Moffett Field, and provides an analysis

the effectiveness of the process. Chapter III is the application of the IDEF0 model to the closure process. Chapter IV summarizes the findings, states conclusions and makes recommendation for future use of research.

II. THE PROCESS USED TO CLOSE MOFFETT FIELD

A. BASE DESCRIPTION AND HISTORY

Naval Air Station Moffett Field is located seven miles north of San Jose forty miles south of San Francisco. It was established over sixty years ago as the home base for a large airship, the USS Macon.(Welcome, 1990,p.4)

The success of lighter-than-air craft in World War I inspired the Navy to further invest in their development. The Navy began with some smaller airships before creating the two larger versions, the USS Akron and the USS Macon. The USS Akron was to be based on the east coast at the Lakehurst Naval Air Station, and the USS Macon on the west coast, at a base to be built to accommodate the large airship. The Chambers of Commerce of virtually all the Bay Area cities raised $ 476,679 in an attempt to make the Bay Area a more attractive site for the new dirigible base. On August 2, 1931 a check for $476,065.90 was drawn for one thousand acres of land in Sunnyvale California and the title was transferred to the Navy for the sum of one dollar. Construction of the facility cost $4,933,500. The base was then called, "NAS Sunnyvale". Several days after commissioning, the field was renamed "Moffett Field" after Rear Admiral William A. Moffett who had died in the crash of the USS Akron.(Welcome, 1990,p.8)

The USS Macon arrived on October 16, 1933, six months after the station's commissioning. The mission of the Macon was to patrol, scout and spot for ships of the Pacific Fleet. On February 12, 1935 the USS Macon crashed. The era of the dirigible lasted only 16 months. The Navy no longer had a need for the base. The Army took over the base and used it for an Air Corps training facility for seven years. In 1942 the Navy regained control of the base as the west coast headquarters for coastal patrol blimps.(Welcome,1990,p.10)

Blimp operations ended in 1947. The base was altered to fulfill the role of hosting fixed wing aircraft. During the next ten years Moffett Field was the home to transport aircraft and then jet fighters. In 1962 NAS Moffett Field became a maritime patrol base, the home to the four-engine propeller driven P-3 Orion. In 1964 Commander, Fleet Air Wings Pacific(COMPATWINGSPAC), was established and Moffett Field became the headquarters for all P-3 anti-submarine efforts, including training, administration, and operations. COMPATWINGSPAC is responsible for patrolling 93 millon square miles of ocean.(Welcome, 1990,p.11)

The primary mission of NAS Moffett Field is to support maritime patrol, however, its secondary mission of housing several different commands is important. COMPATWINGSPAC, provides administrative command and training of all patrol squadrons in the Pacific operating area. Commander Patrol Wing Ten (COMPATWING TEN) is operationally and

administratively responsible to COMPATWINGSPAC. Seven operational squadrons are under the control of COMPATWING TEN. Commander Reserve Patrol Wing (COMRESPATWINGPAC) provides combat-ready patrol squadrons for mobilization during national emergencies. Personnel Support Activity Detachment (PERSUPPDET or PSD) supports the customer commands at Moffett Field in all phases of personnel, pay and passenger transportation. Naval Telecommunication Center (NTCC) acts as a telecommunications center and an anti-submarine warfare communications center. Naval Engineering Service Unit(NAESU) is in charge of finding urgent aircraft maintenance problems. Master Augmentation Unit (MAU) directs, supervises and coordinates the training of the personnel assigned to attain maximum combat readiness for immediate employment with Fleet Patrol Squadrons. Also on board is the 129th AIR RESCUE GROUP, CALIFORNIA NATIONAL GUARD to perform search and rescue when required. NAMTRAGRUDET 1012 provides intensive technical training in repair and maintenance of aircraft, primarily the P-3. Fleet Aviation Specialized Operational Training Group(FASOTRAGRUPAC) was established to teach radar, navigation gunnery, instrument flying and electronics. The National Aeronautics and Space Administration's Ames Research Center (NASA/Ames) is located on the north side of Moffett Field. NASA boundaries cover 422 acres and include 50 major facilities. The runways at Moffett Field also service logistical requirements of Lockheed Aerospace and the Air force National Guard. The U.S. Army has

the headquarters for its aeronautical research elements co-located with NASA/Ames Research Center at Moffett Field.

B. CLOSURE OR TRANSFER?

In February 1991 the Secretary of the Navy gave the order for Moffett Field to officially begin its closure process. (Nagle, 1993) In June 1991 the order was modified by the Base Realignment and Closure Committee(BRAC).(Nagle, 1993) Moffett Field would not go through a "normal" closure and be taken over by the civilian community. It would instead be turned over to another government agency, NASA. The process of transfer remains essentially the same when transferring to civilians or a government agency. All of the units and organizations occupying the base will have to be relocated or disestablished. All materials and supplies will also have to redistributed or disposed of. Facilities will have to be transferred in a manner similar to that of a "normal" closure. The most significant difference, and perhaps advantage, of a transfer vice closure, is that a closure would require more discussion on future use of the base. In a closure, civilian control could mean a reuse of the base in a capacity different from its current use such as, a shopping mall, park, or recreation facility. A non-aeronautic reuse almost guarantees more complex environmental issues, and higher cost to the government. With NASA taking over the

facility it will be used in essentially the same capacity as it was when controlled by the Navy.(Henderson, 1992)

C. COMMENCEMENT OF THE CLOSURE PROCESS

All units on base are to be transferred by 1 October, 1993.(POA&M,1992) This will signal the end of the first phase of the closure process. The second phase, which will primarily concentrate on cleanup, will then commence. Everyone and everything will be gone by 1 July, 1994, when the official decommissioning ceremony will take place.(POA&M,1992)

As soon as the order officially came down to Moffett Field, steps were taken to begin closure. An executive committee for base closure was formed. A NASA executive chaired the committee since they would be taking over the base. Members of the committee included the Commanding Officer of NAS Moffett Field, Commanding Officer of the 129th Air Rescue Group , California National Guard, Commodore of the Reserve Patrol Wing, Commanding Officer of Onizuka Air Force base, and the Commanding Officer of the sixth Army at the Presidio. With the exception of the Commanding Officer of Moffett Field, all members represented organizations that would occupy the facility after the departure of the Navy.(Nagle,1993)

In addition to the executive committee, a transition office was established to carry out executive orders. The transition office is centrally located on the base. It houses

over fifty members of a steering committee. The steering committee members are essentially the "worker bees" responsible for accomplishing the tasks necessary to get the base properly transferred. The steering committee is composed of civilians, officers, Navy and Air Force personnel. The Navy members include a lieutenant, a lieutenant commander, and a commander. There is a lieutenant colonel from the National Guard, a lieutenant colonel from the Air Force, and a captain from the Army. There are over fifty civilians from NASA. The steering committee holds meetings weekly. Service representatives attend the meetings in addition to about five or six civilian members. The meetings average about a dozen attendees. Technical experts from a variety of backgrounds serve as committee members. Their backgrounds include medical, financial , security, environmental and public works.

Initially, the executive officer of the base was in charge of overseeing the transfer process for the Navy. As the task grew to be more monumental, the decision was made to place someone in the position full time. A Navy Commander was chosen to preside over the steering committee.(Nagle, 1993)

The main role of the steering committee is to support the commands until they leave or are disestablished. The committee also has responsibility for the property and facilities left behind by each command. In order to execute their duties and responsibilities, the steering committee received eighteen million dollars from a special fund created

for expenses incurred in the execution of the transfer orders.(Nagle, 1993)

D. PLAN OF ACTION

On 22 December, 1992 a Memorandum of Understanding between the Department of Defense and NASA Ames was signed. The purpose of the memo was to document the major points of agreement which the Department of the Navy and NASA would use in implementing the transfer order. The main points that were agreed upon were: NAS Moffett Field would remain a federal facility, the transfer is a no cost transfer to NASA, the housing on base transfers at no cost to the Air Force, the Navy is solely responsible for the environmental cleanup, and NASA has the ultimate decision on reuse. The memo included a tentative realignment schedule.(Memorandum, 1992)

A forty-five page plan of action and milestones(POA&M) for the turnover and realignment of NAS Moffett Field was established. It is a chronological presentation of every significant task in the closure process that will take place between the 1991 start date and the 1994 completion date. The POA&M includes the action to be taken, the date the action is to be complete, the command involved, the party responsible for the task, and the status of each activity. The POA&M is computer based so that the status can be updated regularly. The POA&M is the main planning document for the steering committee.(POA&M, 1992) For planning purposes the committee

also created military and civilian manpower reports. These reports are graphical representations of the civilian and military manpower levels, actual and forecasted,up to the time of complete transfer. Steering committee members went to all the activities on base and solicited accurate totals of the number of military and civilian personnel within there units. They also asked for estimates of month to month expected downsizing until the unit would reach zero personnel on board. The units continue to report their manpower status monthly. The actual monthly status is compared to the projected status and the comparison is displayed in the report.(Nagle, 1993)

The steering committee created an inventory planning document so they could maintain accountability of all the materials on base that would require transfer. Again they solicited the commands. This time they requested thorough inventories of every item within the commands that would require disposal or transfer. Some items could be taken with the units if they were transferring rather than disestablishing. The majority of items would be turned over to the committee for disposal. The final inventory list included 19,000 items. Many of the items will eventually be turned over to Defense Reutilization Maintenance Organization (DRMO), but accountability for each item must be maintained throughout the process.

The committee developed a building transfer matrix to track the transfer of facilities. The matrix included the

name of each building on base, the buildings tenant, the projected date the tenant will vacate the premises, and the dates that the building will be inspected. Since the facilities are to be turned over on a no cost basis, no repairs or upgrades are made to the facilities for the purpose of transfer. The facilities are being inspected jointly by the Navy and the future occupants. Any maintenance requirements are noted so the future tenants can plan for the necessary repairs.(Nagle, 1993)

Facilities, material, and personnel, were the three major categories of resources in the closure process. The POA&M, the military and civilian manpower reports, the inventory planning document, and the building transfer matrix are the primary documents used by the steering committee to plan and track their progress. Most of the input for these reports came from the units on base. All of the reports were computer generated so that they could be updated and corrected as necessary. Decisions about the content of each report were made by steering committee members.(Nagle,1993)

To determine how and when each Morale Welfare and Recreation(MWR) facility would close, the committee established priorities. The committee's primary objective was to preserve "quality of life" for the base tenants. With quality of life the primary objective, MWR facilities were a top priority. Commissary and Exchange facilities also received a great deal of attention. The goal was to keep

these facilities open as long as possible in order to maintain morale. Rather than have committee members arbitrarily decide which facilities the tenants would want remained open the longest, they asked the tenants themselves. A survey was sent out to all base tenants asking their frequency of use of the base MWR facilities, their preferred time of use, and the relative importance of each facility. The survey results were compiled and used to establish the time line for closing base facilities.(POA&M, 1992)

Material transfer amounted to relocating 19,000 items mostly furniture. Many of the other items held by the units were under the jurisdiction of their individual commands. For example, the squadrons possess large numbers of tools and support equipment for the aircraft, all of these items are the responsibility of the squadron to transfer as directed by their governing Wing Commander. The committees only concern over these items is to see that they are transferred within their specified time frame. How and to whom the materials are transferred, is not the responsibility of the committee. The majority of the 19,000 items that are the responsibility of the committee will either be given to NASA or submitted to DRMO. Some of the items were sent with relocating units to their new commands. This was not done on a wide spread basis because usually the units report to facilities already stocked to support their material needs.(Nagle,1993)

The committee established the date of 1 October, 1993 as the date that all military personnel on base should be gone. Other than complying with this requirement, the individual units own headquarters have full discretion in deciding when the units will transfer. The unit headquarters also make the decision on how they will transfer, either relocation or disestablishment. Although the committee members don't control this movement, they rely on it heavily to make other planning decisions that directly effect them. They rely on it to plan for the availability of facilities and to plan for the disposal of their material resources.(Nagle, 1993)

The second phase of the closure process will involve some extensive environmental clean up. In accordance with the Defense Base Closure and Realignment act of 1990, Public Law 101-510, and the Federal Facility Agreement(FFA) executed on August 8,1989 between the Department of the Navy and the United States Environmental Protection agency, Region IX, the Navy retains complete responsibility for compliance with all terms and provisions of the FFA and all other environmental restoration or remediation requirements and regulations related to the activities of the Navy. There is an environmental clean up plan in progress. It is projected that the clean up will not be complete until the year 2005. This projected clean up date remains accurate if and only if the base receives an extensive amount of funding required to eliminate environmental hazards.(Memorandum, 1992)

E. OVERALL EFFECTIVENESS

Moffett Field is the first Commander Naval Air Forces Pacific (COMNAVAIRPAC) organization to decommission.(Defense, 1988) A significant learning curve throughout the closure process was expected. Unlike most other events that takes place in the Navy, there are no established procedures and well-designed plans for transferring a base.(Nagle, 1993) The process in place at Moffett Field seems to be working well, with a few minor exceptions. Getting started posed somewhat of a problem since no one had a basis for what the process should consist of. Initially base staff underestimated the task. The position of base coordinator was a collateral duty. After careful re-evaluation the base Commander made a swift effective adjustment and assigned someone to the position full time. This put the Moffett Field closure committee on the road to developing a large scale comprehensive plan for implementing the transfer order.(POA&M, 1992)

Probably the biggest obstacle in the process was the coordination of the transfers of the military organizations.(Nagle,1993) The main problem was that the organizations were not receiving timely direction from their appropriate authority on how and when they should transfer. The committee experiences long waits and delays on decisions from the units' headquarters. These delays in turn delayed other decisions and stall planning efforts. The committee was powerless to force the unit commanders into making

decisions.(Nagle, 1993) They worked around the delays and presume that the commands would be gone by the established deadlines. Although some of the delays caused by the units were not within their power to control, some units themselves have been the cause of delays that are within their means to control. Delays brought on by the organizations were mainly the result of the late turn in of items requested by the committee. Some units turned in requested items such as their material inventories and their survey results late. Again this hindered the committee and their ability to get out an accurate and comprehensive plan. It also impeded their ability to provide sound guidance and direction.(Nagle, 1993)

Complaints about the closure process from military personnel that have reached the transfer office, have been limited to less than twenty.(Nagle,1993) Most military members will have transferred before the impact of closing facilities can be felt. Although infrequent, the majority of their complaints stem from not knowing when or where they will be transferred. There are also minor complaints about MWR facilities such as long lines or limited hours of operations. If service members had complaints that were pertinent to the closure committee, they could be voiced through their normal chain of command to the base commander.

Civilian personnel present unique challenges. The majority of the civilian positions on base will be eliminated. A small minority will be able to transfer with their units.

For those who learned that their positions would be terminated, they were quickly out looking for new employment or making arrangements to move on.(Nagle, 1993) The result has been numerous vacancies in senior positions and earlier than anticipated losses of some of the best performers. These unplanned vacancies in the upper level positions was causing a sometimes haphazard fill of these positions with not fully qualified junior personnel. The reductions in force had also caused a decrease in morale among the civilian personnel.(Nagle, 1993)

Since the base is not being turned over to a civilian authority, potentially complicating issues have been avoided. Military personnel did attend city council meetings to keep the public informed on the progress of the base closure.

The planning documents used to manage facilities, material, and personnel were very effective. Thus far the majority of facility turnovers have been accomplished on time.(POA&M, 1992) There have been no reported losses of plant property, or significant losses (losses in excess of one hundred dollars) of minor property.(Nagle,1993) Even though the personnel turnovers have not taken place in exact accordance to schedule, the committee has maintained accurate records of the status of personnel on board, which included their most current estimated departure date. The effectiveness of these documents is attributable to the fact that their usefulness was maintained in a constantly changing

system. They were part of a computer database and were upgraded daily. The documents themselves were easy to read, change and comprehend. They provided structure which allowed for productive control and planning in the dynamic environment.

The committee was given eighteen million dollars with no specific instructions on how to spend it accept for the requirement that it be spent on something that results from a base closure action.(Nagle,1993) These vague instructions left many grey areas, and many significant financial decisions to the discretion of the committee. Almost every activity on the base could some how be attributed to the closure process. The committee had no sense of how far eighteen million dollars would go or which activities were affordable or a priority.(Nagle, 1993) Such broad authority could be seen as advantageous, however, trying to design a spending plan for eighteen million dollars without any criteria or guidelines can be a difficult task. It was particularly difficult in this closure process since there was no previous data available to establish baseline or priorities. The committee worked with budget experts in the comptroller office to develop a spending plan that was essentially their best guess on expected costs of major events in the process. Initially some of the spending was done adhoc; expenses were taken care of as they occurred. As the committee continued through the process their spending plan became more refined. Each

individual unit was allotted a specific amount of funds. This was further broken down by department. Shipping and civilian personnel transfers consumed the largest share of the budget. Since the civilian personnel cost were relatively simple to decipher, the remaining allocation decisions were usually based on the volume of material possessed by the unit.(Nagle, 1993)

Closure funding was reviewed quarterly by the BRAC commission to determine if it was adequate or in excess. As of June 1993 quarterly reviews have only resulted in increased allocations.(Nagle, 1993)

A good working relationship with NASA was key to successfully completing the objectives of the closure process. The Navy and NASA maintained active lines of communication throughout the process. They met with one another at the worker level on a daily basis. They met on the executive level on at least a monthly basis. Actions weren't implemented without agreement on both sides. They were able to come to a consensus on all major issues without the intervention higher authorities.(Nagle, 1993)

Each organization was dictated by their commanding authority to assign competent, knowledgeable individuals on a fulltime basis to the committee.(Nagle, 1993) Although the majority of personnel had no experience with closure processes specifically, they possessed individual skills valuable to the process. Valuable because they provided the technical

expertise required in the decision making process. Another important factor was that the people assigned to the committee were able to commit their time and work efforts solely to the process, or at least were able to make it their primary work responsibility.(Nagle, 1993)

Being the first COMNAVAIRPAC organization to decommission, Moffett Field has certainly set some standards. Although there were some glitches in the system, it seems that with their experiences and successes, new instructions and guidelines can be established to assist future decommissioning squadrons. Perhaps incorporating their experiences with a formal process improvement model will further enhance policy guidelines for future base closings. This is the topic of the remainder of this thesis.

III. APPLYING THE IDEF0 MODEL

A. MODEL BACKGROUND

As a result of congressional displeasure with Department of Defense(DOD) management of information technology, and the imminent downsizing of DOD, the Secretary of Defense proposed numerous initiatives to improve Defense information systems. In November of 1989 a Corporate Information Management(CIM) office was created. Their primary objective was to standardize information resources for DOD.(Redesign, 1992,p4)

In December of 1990, DOD's automated data processing management was moved from the DOD Comptroller to the Assistant Secretary of Defense for Command, Control, Communications and Intelligence (ASD [C3I]). ASD (C3I) created the position of Director of Defense Information(DDI) to lead the effort of executing CIM policies. The Defense Information Systems Agency was established to support the director and provide the expertise required to carry out the policies.

After the appointment of the DDI, the focus of CIM began to shift. The new DDI incorporated standards for business practices and processes into information technology. DDI sought to make "smart" defense reductions rather than across-the-board cuts. The goal was to get DOD functional mangers to express their information technology needs in economical and

efficient terms using business practices and management methods. The goal was to have DOD agencies to reduce their activity to include only those that added value to the business processes of the organization. In order to pare down to these "value added" activities, a means of improving processes was required. In April 1991, the DDI proposed that the Naval Postgraduate School(NPS) undertake a research project that would assist in implementing DDI's new objectives. (Redesign,1992,p.5) The research project was funded for 1992. A NPS faculty-student research team was formed. Their task was to model the process of process improvement using the IDEFO modeling tool. The model would be used to develop a guide book on process redesign for DOD functional managers. The NPS team named itself the Redesign Experts And Practice (REAP) Team.

The REAP Team participated in two five-day exercises to the develop the model. The first exercise resulted in establishment of the "whats" required for process improvement. The team identified five activities that constituted what the process of process improvement was. The second meeting resulted in defining the "hows" of process improvement. The "hows" were of tremendous importance to DDI.(Redesign,1992,p.6) DDI wanted to be certain that the model would be a useful tool for functional managers attempting process redesign. Functional managers would need

to know specifically how to implement the elements that constituted the process for process improvement.

While developing the model, the group continually evaluated their primary objectives of ensuring that the model was useful in planning, organizing and executing process improvement. They also sought to ensure that it was concise, clear, practical, and focused on implementation. The official charter of the REAP Team was to produce a quality model of the Process Improvement Process (PIP) using IDEF0 modeling techniques.(Redesign, 1992,p.7) The intention was that the model would be used to improve processes for mission accomplishment. The model was designed for use by the DOD functional manager. A functional manager can be defined as a manager responsible for any organizational activity or business process subject to redesign (Redesign,1992,p.7). Applying the model to defense processes in need of redesign will help determine its usefulness.

Since the process of base closure is new and relatively undefined, it should be a good candidate for applying the REAP model. With the current downsizing of the military, and numerous bases already scheduled for closure, redesigning the process could save significant amounts of resources.

B. DEFINING THE REAP MODEL

The model developed by the REAP Team used IDEF0 modeling techniques (Redesign,1992, p.5). IDEFO techniques graphically

represent the processes within an organization. They show the specific steps or tasks required to complete an activity. An activity is defined in the model as a task that has one or more occurrences over time and produces recognizable results. It also shows the logical interdependence of each task to another. Activities are represented by the different types of diagrams. There are Node Trees, which graphically represent the activities. There are Context diagrams, which identify the inputs and outputs of activities along with their controls and mechanisms. This is done in terms of either information or materials. Decomposition diagrams represent a more carefully defined activity. They show subactivities and the interrelationships of inputs, controls, outputs, and mechanisms. The purpose of such representations is to clearly identify the activities and their relationships to one another.

The model graphically represents the process as well as it defines the terms and activities within the process. Each complex activity is identified and explained. The activities can be further broken down into subactivities. Breaking down the activities further and further allows for fine-tuning. The scope of this thesis is to examine the twenty-four key activities identified in the model, and apply the them to the base closure process, specifically the process at Moffett Field.

The activities are:

- Marshalling Resources
- Identifying Customer and Suppliers
- Identifying Needed Resources
- Identifying Existing Resources
- Identifying Requirements for Additional Resources
- Acquiring Resources
- Creating an Environment for Discontinuous Thinking
- Avoiding a Hostile, Threatening Environment
- Promoting Cross Functional Thinking
- Promoting Involvement
- Designing the Improved Process
- Identifying Customer Needs
- Evaluating Customer Needs
- Identifying How to Meet Customer Needs
- Modeling the As-Is Process
- Determining Recommended Change
- Implementing Changes
- Establishing Implementation Structure
- Managing Project
- Providing Change Communication
- Monitoring and Evaluating Change
- Executing Changeover

C. MODEL APPLIED TO CLOSURE PROCESS

1. Marshalling Resources

The Functional manager attempting to redesign the process of base closure, will first have to ensure that the proper resources are available to accomplish the task. The major resources required in the base closure process are personnel and funding. In the Moffett Field case, the Navy provided the facility and phones for the committee. All other office equipment and supplies were provided by the commands from which the members came. The process was given top priority by DOD and local authority to minimize problems in acquiring initial resources. Additionally, a base in process of losing personnel usually has excess material resources. Without this priority status or an abundance of resources, there needs to be a method in place for acquiring resources. As base closure become more commonplace it is likely that they will lose some of high visibility and priority status.

2. Identifying Customers and Suppliers

The primary customers in the closure process are the military and the civilian government workers on base as well as the civilian population outside the base effected by the closure. The primary suppliers would be the government agencies dictating the base closure; the BRAC commission, congress and the Department of Defense. Although no formal process such as Total Quality Management, was used to identify

their customers and suppliers, the Moffett committee identified its customer as the base tenants and made "quality of life", or fulfilling the needs of the customer, its top priority. The committee saw BRAC as their primary supplier.(Nagle,1993)

3. Identifying Needed Resources

During this stage the requirements for resources that were established earlier are refined. Along with personnel and funding, there is a requirement for operating facilities and office equipment. There are other requirements unique to the military such as access to the chain of command, and authority to change policy.

Since initial resources allocations are likely to be dictated in a military environment, this stage of the process is critical. Committee members need to be familiar enough with the process to be able to correctly identify what is needed to get the job done. The Moffett committee had some difficulties identifying their resource needs because of the unfamiliarity of the process and the lack of experience to draw from. As they moved along further into the process they continually reassessed their needs and came up with a good fit for the organization.

4. Identifying Existing Resources

Before acquiring things that may be unnecessary, it is important to establish what is already available in order to

avoid duplication or waste. This would include items already on the base accessible to you or your team.

The Moffett team used input from the individual organizations on base to establish inventory and manpower levels. They compiled all of the inputs to determine overall resource wealth. Their funding level from BRAC was there primary monetary source; however, they realized that some activities which may vaguely be classified as a closure activity could be funded from alternative sources such as unit Operating Targets(OPTAR) or the station budget. BRAC funds have been sufficient to date so that they have not had to use alternative funding sources, however, the alternatives have been identified for use if required.

5. Identifying Requirements for Additional Resources

During this step existing resources are compared to needed resources to determine what the resource requirements should be. In the closure process this would mainly entail an evaluation of material, personnel, and monetary requirements. Although initial resource allocations were made after the announcement of base closure at Moffett Field, there was no formal process used to quantify the level of resources required. As a result, oversight of the closure process was initially given to the Executive Officer of the base who had numerous other responsibilities at the time. The Naval Officers assigned to the committee were performing many tasks

not customarily assigned to officers of their seniority. Although the officers completed the tasks assigned to them, perhaps a more careful initial identification of resources would have led to the assignment of personnel more skilled at the routine administrative tasks performed by the officers.

As far as material resources were concerned, the committee was able to obtain the office space and equipment necessary to function. They were able do this because they were deemed a priority by higher authority. A method should be in place that would ensure adequate allocations regardless of the environment. Establishing minimum resource levels would help prevent waste and shortages. Each organization provided their committee members with the resources needed to complete their job, members were well equipped and there was very little waste of resources.

Identifying the monetary requirements would certainly improve the process and prevent shortages from causing unnecessary delays while waiting for additional funding requirements. The funding received by Moffett Field to date has been adequate. Although funding requirements could not be precisely identified initially, it is important to establish some criteria as they did at Moffett, to plan resource use. The use of experienced financial planners is also beneficial in managing funds. Identifying requirements for funding prior to expenditure is necessary to avoid budget pitfalls.

6. Acquiring Resources

The objective in this step is to find sources for the additional resources that may be required. The closure process is unique in that most of the sources are easily identifiable in the chain of command. Identifying the ones that are most likely to be called on can save time and help ensure requests are approved. By knowing the correct procedures for acquiring resources, a strategy for a particular source can be developed in advance and requests can be tailored to that sources specifications. Starting a process with the correct resources is essential to its success. In the closure process not having the resources to carry out policy could be devastating particularly since much of the policy is dictated by law.

The high visibility and high priority given to this base closure has allowed the committee members to successfully achieve the funds and personnel required to execute the process. The BRAC funding has been more than adequate thus far. The personnel assigned to the committee have been successful in achieving objectives and finishing tasks on time. There has been a high level of cooperation on the committee between members from various organizations.(Nagle,1993) Each organization has adequately supplied its members with the resources needed to complete their job requirements. There has also been cooperation among

the activities to supply resources to activities other than there own.

7. Create an Environment for Discontinuous Thinking

Encouraging people to think of things differently or in a new way, brings fresh creative ideas into the process. Since base closure is in essence a new idea to most of those who are involved, being stuck in an unproductive paradigm is less of a problem. Although many of the ideas in the process will be new, they won't necessarily be creative. Since there isn't much structured doctrine on base closure, process redesign is an excellent opportunity for introducing innovative ideas. The Committee at Moffett Field engaged in a lot of brainstorming to generate new ideas. Although they did not have much experience in base closures, they drew upon there experiences and expertise in other areas to design a process that would accomplish the mission in the most efficient way possible. Their collaborative budgeting, the base wide surveys, and all hands meetings were innovative to normal military processes.

8. Avoid a Hostile, Threatening Environment

Anything that prevents people from openly exchanging ideas, needs to be avoided. People must feel free to submit their ideas and suggestions without fear of reprisal or ridicule. When a base closes it will inevitably effect many people. Military personnel will be effected as well as

civilian government employees and the civilian community outside the base. All of the these groups are stakeholder in the process and potentially have something significant to contribute to the process. Avenues for these contributions must remain open. The creation of a diversified committee where everyone was free to make inputs, was an effective technique used in the Moffett case. The "all hands" meetings and the attendance at city council meetings exhibited an openness to new ideas. The director maintained an "open door" policy so that committee members felt free to make inputs any time, not just at weekly meetings. Perhaps the method of input for military personnel in this process could have been changed. Having them report in the customary manner via the chain of command to the base commander would probably illicit few ideas or suggestions for fear their suggestions would never be heard. Initiating a more direct means of communicating with the committee could possibly benefit all of the groups involved.

9. Promote Cross Functional Thinking

Those involved in the process must be familiar with and involved in areas other than their immediate area of responsibility. In the Moffett Field case, most non-Navy members of the committee stuck to their area of expertise. The Naval Officers were required to be a bit more diversified and become involved in all facets of the process. Since the

closure process usually expands over a period of years or at least a year, there is potentially time for some job rotation or at least familiarization with the jobs of others. This will allow for positive interface between members and possibly new ideas.

Committee members worked in and out of their areas of responsibility an this seemed to enhance the process. It created greater flexibility during worker shortages and it gave members a variety of experiences and challenges. It also provided better understanding of the jobs of others, and fostered a more cooperative work environment.

10. Encouraging Creative Thinking

Innovative ideas are key to process improvement. Encouraging creative thinking will stimulate innovative ideas. The obvious improvements in the closure process would be to decrease the cost and shorten the process time. There are other not so obvious ways that the process could be improved. Increasing customer satisfaction by providing those left unemployed with job assistance is one method. Another would be to design a reuse for the base that would provide new employment opportunities.

Creative thinking has been encouraged throughout the closure process at Moffett Field. Lines of communication have remained open and constant improvement has been sought.

11. Promoting Involvement

In order to encourage involvement, many techniques can be implemented. In the closure process it is important to have all stakeholder actively involved. Moffett did a good job of getting the majority of stakeholder involved. Civilian and military base tenants had a voice as well as the civilian community. It is important to give the stakeholder a voice in how the process should be implemented since in all likely they had little voice in deciding if the process could be implemented at all, which is likely to have created some hostility.

Incentives and rewards should be provided. Rewards need not be material, perhaps positive evaluations or special recognition to show that the individuals inputs are valued and not overlooked. No special awards were put in place for committee members, however, they were entitled to the same rewards normally generated by there commands.

Military personnel are simply transferred in the closure process while the majority of government employed civilians lose their jobs. It is crucial to conscientiously promote the active involvement of these individuals and utilize their inputs since they will be most adversely affected by the process. Actions to counter act the loss of quality personnel need to be developed before the losses occur and these personnel need to be specifically targeted for their input.

12. Designing the Improved Process

The experiences of Moffett Field in the closure process give us the As-Is process. An ideal process is modeled by correcting for complications experienced in the actual process and incorporating new ideas. Comparing the As-Is with the Ideal and determining which elements of each is best suited for mission accomplishment, will facilitate in deriving process improvement. A recommendation will be made as to which is the best solution and a plan to implement it must be developed. In the case of Moffett Field the process As-Is seems to be functioning well. Adapting a few suggestions from Ideal circumstances will certainly improve the process. Implementation of the new process will come in the form of lessons learned issued fleet wide and instructions laying out the process explicitly.

13. Identifying Customer Needs

The needs of all the base personnel, military and civilian need to be described in detail. They have individual needs, and common needs. Most of the personnel involved will seek explanations of how the process will precisely effect them. There is a need for information such as, when how and where facilities will be closed. There is also a need for assistance, this may express itself in the form of financial or social needs. Civilians may need relocation and job

assistance while service members may need family service aid while they are in limbo as to where they will be transferred.

Although customer satisfaction was a priority for the committee, without formally dedicating time and effort to identifying customers and their needs some minor areas were overlooked and there was perhaps not enough emphasis placed on the major needs. The need for information by the base tenants, particularly the civilian employees, turned out to be an area of greater concern than anticipated. Family service assistance was available, however, it was probably needed on a larger scale for such a complicated issue involving so many people.

14. Evaluating Customer Needs

After the needs of the customer have been identified, they must be prioritized in some way. The Moffett committee chose "quality of life", defined as satisfying the needs of the base tenants(Nagle, 1993) as their first priority in the closure process. The remaining needs in the process were not formally ranked. Retaining customer quality of life as the priority in the improvement process, will keep the focus on the customer, and satisfaction of the customers needs. This will ultimately lead to the goal of mission accomplishment.

15. Identifying How to Meet Customer Needs

Once the needs of the customer are prioritized, a method of meeting these needs must be designed. If retaining

quality of life is the priority then this can be met in a variety of ways. Ensure the customers have input into how their needs should be met. At Moffett they used a base wide survey to determine which facilities were of most importance to the customer and how they would prefer them to be closed. Having the customer tell you how they would like their needs met is a good way of ensuring the objective of satisfying customer needs is met. Other methods of meeting customer needs would be to solicit assistance from outside the process. For the military members better communication with their controlling authority would provide them with better information, as well as providing the committee with better information so that they could make better planning decisions. For the civilian community, demonstrating how a specific aspect of the closure process could benefit them would be advantageous. For example, part of the land could be donated for a community project, or perhaps, there might be the generation of some new or different type jobs to off set the job losses.

16. Modeling the As-Is Process

The formal evaluation of the process as it took place at Moffett Field is the process As-Is. Defining the process As-Is has made it possible to identify what is and is not working. Most of the activities in the process being used at Moffett seem to be value added activities. Using Malcolm

Salters (Salter, 1988) definition, "value is the expected worth of participation by capital, labor, and management in an enterprise over and above the level of return anticipated from alternate choices". Analyzing the major decisions made by the committee, it is certain that for the most part the routes taken proved to be successful and less troublesome than some alternate solutions potentially would have been. For example, actively soliciting information from stakeholder avoided the hostile confrontations that would have resulted had this not been done. The areas previously mentioned where there are inefficiencies should be the focus of the process improvement process. The areas that can be identified as having value added should be the example and the areas where there are inefficiencies should be the focus of the process improvement process.

17. Determining Recommended Change

Deciding on what changes should be made in the process is the next step to process improvement. Changing everything that is not ideal isn't necessarily the goal. Since the base closure process is in its infancy, each element of the process needs to be given a chance to work. The areas that obviously need changing are the areas where there were no plans or where incremental planning was inadequate.(Reid, 1992,p.39) Instead of single-mindedly looking for change, the focus might be on improving what already exists. An incremental approach to

budgeting is usually inefficient. At Moffett field they quickly moved away from this approach as they attained the information necessary for planning decisions. This information should be available at the onset of the process.

18. Implementing Changes

There aren't any DOD instructions which govern exactly how to close a base. In a large complex environment such as DOD, consistent policy guidelines are essential to controlling complex processes.(Loubert,1988) These guidelines, to be most useful, should be applicable under varying circumstances. With more base closures on the horizon, it would be most beneficial to standardize the process in order to shorten time involved in the learning curve process. The process should be standardized to meet with the best of the As-Is model and the Ideal model. The implementation of the newly recommended changes would first go up the chain of command in the form of "lessons learned", then a proposal for a formal instruction governing the closure process for all defense agencies could be submitted.

19. Establishing Implementation Structure

A team, preferably of stakeholders, will have to develop a structured plan that will detail how implementation should take place. The team approach was used at Moffett Field and it be proved to be successful. The teams success can be attributed to the fact that it include various

stakeholder who were each given a meaningful role, and shown that their input was desired and valued.

20. Managing Project

The Navy members of the committee at Moffett Field were the project managers. To implement these processes at another installation, the organization leaving the facility should be responsible for the overall management of the process while still working closely with the organization to whom the base will be transferred. The majority of the work involved in the closure or transfer process revolves around the occupying tenant of the facility relocating personnel and property. The objective should be to manage these tasks in a manner agreeable to both organizations. Although the current base tenants may lead the committee, all of the organizations representatives must have a voice in management decisions.

21. Providing Change Communication

In order to get the changes implemented on how a base closure should transpire, team members will have to get their proposals approved by the chain of command. The lack of formal instruction on the closure process and the imminence of future closings will help sell the idea of improving current policy. Moffett could be used as a model to illustrate how the process is currently working. The recommended changes should be presented and explanations should be provided on exactly how the changes will improve the process. It should

also be explained how these policies can be implemented DOD wide. Formal schooling for implementing a base closure is unnecessary, however, informal training for the program directors could have a positive outcome on the process at a low cost. The training and guidelines provided to the fleet, will have to be general enough to be applied to all the different services.

22. Monitoring and Evaluating Change

After implementing changes it is necessary to have a mechanism in place to monitor the changes. A subdivision of the steering committee could assume this monitoring role. It would be an on going function. They would continually evaluate the effectiveness of the changes by comparing them to past process data. At Moffett, the committee as a whole continuously reevaluated its functions and made revisions as necessary.

23. Execute Changeover

Once a new process has been accepted and recognized as an improvement, it will be distributed to DOD commands. There will be guidelines and standardization for the base closure process. These guidelines will help alleviate the problem of clashing expectations once people have been involved in more than one closure process.

24. Active Participation

The new process must receive support from both the customers and the suppliers. The governing bodies must provide support to the closure committees and ensure that all organizations involved in the process are meeting their obligations.

IV. RECOMMENDATIONS AND CONCLUSIONS

Soaring national debt has forced congress and the executive office to seek substantial budget reductions. Defense spending has been perceived as a major contributor to the debt problem. Defense is targeted as an area where significant cost savings can be found. Additionally, the demise of communism and change in world order, has led to a change in military security policy. The new national security policy of the United states requires a reduction in the large numbers of personnel, hardware, and facilities that were built up in the eighties. To date, base closures seem to be one of the primary mechanisms of choice for accomplishing these reductions.

Relatively few bases have gone through the closure process. As more and more organizations become involved in the closure process, it is likely to become more and more complicated. If we are able to learn from our experiences and apply this knowledge, the process could be simplified. Currently there is little defense wide policy on how the process should be executed. Providing sound guidance and policy for future base closures is likely to save time and money. Such guidance is also likely to increase customer satisfaction. Customers that include military, civilian, and government employed personnel.

The focus of this thesis was to evaluate a method of redesigning and improving the closure process. Moffett Field, which is currently going through the closure process, was used as a case study. The process adopted by the transfer committee at Moffett Field was carefully evaluated and found to be functioning well, particularly since they are the first COMNAVAIRPAC facility to undertake the process. There were, however, areas where the process could be improved. These areas were discovered through the use of an IDEF0 model developed by a redesign experts and practices (REAP) team.

The model was applied to the process of base closure at Moffett Field. It was found that the model was useful in identifying areas in need of redesign and improvement. The model worked well because it provided a structured method to seek process improvement. It covered aspects of the process that may have been overlooked in searching for improvement in the traditional way. The trouble spots were easier to identify. The model is practical for the functional manager since it is written in practical language. There are also graphical representations which provide clarity and make it more useful. It worked well as a tool to improve the closure process.

As a result of applying the IDEF0 model to the process of closure at Moffett Field, I have specific recommendations for the future implementation of the process. A team of individuals, composed of members of from every stakeholding

organization should be established. The team must be given the necessary authority to accomplish all mandated tasks. Initially the team should determine their required resources, and ensure they have the resources necessary to execute the mission. They should plan how they will accomplish their objectives.

Specific tasks that can be undertaken include mapping out funding requirements before spending begins and estimating budget requirements. This may involve the use of outside experts to provide the team with accurate and useful projections. The team should be able to provide immediate feedback to the budget controllers as to the adequacy of funds. This continual feedback will likely alleviate the need for the augmentation or reduction of funds.

Personnel assigned to the team should be from diversified backgrounds such that outside help isn't frequently required. The military members of the team should be of the rank and or rate that they also provide different levels of skill and expertise.

There also must be adequate facilities for the team to convene, and adequate office equipment to include computers for establishing a data base. Preferably membership on the team would be the primary if not exclusive duty of team members.

Communication is key to the process. As the processes continue a network should be set up so that program directors

going through the process or those who have gone through the process can communicate and assist one another more easily. "All tenants" meetings for base tenants are a good way of putting out the word but probably not the most effective way of receiving feedback. Smaller meetings with organization representatives are an effective means of getting feedback. These meetings should include military and civilians since the military chain of command through the base commander is likely to become cumbersome and ineffective for such feedback. Attending city council meetings is essential, particularly if the base is being transferred to the civilian community where issues are likely to become more complex. Some special forms of communication such as surveys, can be utilized to determine customer priorities about which facilities to close first.

Setting up special subcommittees to monitor particularly volatile issue like reductions in force, should help alleviate behavior problems, bad moral, and help retain enough qualified personnel on hand until closure. The subcommittees could work with family services to provide assistance in relocation and transfer. They could also offer employment assistance and set up a special job placement services to continue throughout the process.

Support throughout the chain of command is essential. Many planning decisions can be delayed or foiled as a result of another commands' indecisiveness. The commands authorized to make decisions about the transfer of military units must be

held accountable to some sort of reasonable time tables. They should also be required to provide periodic updates or feedback to the team director.

Managing this process will necessitate the use of documents that retain their usefulness in a dynamic environment. Computer based documents that track personnel, material and facilities are useful. They should track actual and projected figures. Before the process begins the team should determine what specific information will be included in each document. A complete Plan of Action and Milestones (POA&M) should be generated from the input of each organization and used as the primary planning tool.

Special considerations in the process such as environmental clean up will be mandatory in the majority of bases. Many of the requirements for environmental clean up are dictated by law. Assigning individuals the responsibility of environmental clean up and holding them responsible for ensuring completion of all legal requirements, may foster a more amicable relationship with the future tenants.

Implementing these recommendations into a formal process and retaining customer satisfaction as the top priority will provide an effective means of closing bases efficiently and timely in the future.

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